

REMARKS

Claims 1-21 are pending in the application.

Claims 1-21 stand rejected.

Claims 1, 12 and 21 have been amended.

Formal Matters

Applicants have amended the abstract to conform to the requirements of 37 CFR §1.72(b) (MPEP §608.01(b)). No new matter is added thereby.

Rejection of Claims under 35 U.S.C. §101

Claims 1-21 stand rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. Applicants respectfully traverse this rejection.

As an initial matter, Applicants wish to thank the Examiner for the finding that the claimed invention provides useful, concrete and tangible results. However, Applicants further respectfully submit that the claimed invention is not simply an abstract idea, but is indeed statutory subject matter.

Not only does the claimed invention provides useful, concrete and tangible results, as well as advancing the technological arts, but (as can be seen in claims 1- 21) is drawn to a method for allocating a set of resources, which Applicants respectfully submit is statutory subject matter. As to the question of this method being simply “an abstract idea” that “merely model[s] a mathematical relationship” (Office Action, p. 3), Applicants note that the Supreme Court has noted that any step-by-step process, whether it is electronic, chemical, or mechanical, involves

an "algorithm" in the broad sense of the term. See State Street Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F.3d 1368, 1374-75, 47 USPQ2d 1596, 1602 (Fed. Cir. 1998), cert. denied, --- U.S. ---, 119 S. Ct. 851 (1999). The court noted that "[u]npatentable mathematical algorithms are identifiable by showing they are merely abstract ideas constituting disembodied concepts or truths that are not 'useful.' . . . [T]o be patentable an algorithm must be applied in a 'useful' way." Id. at 1373, 47 USPQ2d at 1601. Applicants therefore respectfully assert that allocating a set of resources is indeed applying the use of mathematics in a useful way, although admittedly, this method does include the use of mathematical computations.

While Applicants believe that claims 1, 12 and 21 in their original form were sufficient for purposes of this distinction, in order to more clearly point out the fact that the claimed invention is not simply an abstract idea, claims 1, 12 and 21 have been amended to recite that the claimed methods are automated methods.

Applicants therefore respectfully submit that the invention claimed in claims 1-21 is indeed statutory subject matter under 35 U.S.C. §101.

Rejection of Claims under 35 U.S.C. §102

Claims 1-10, 12, 14, and 16-21 stand rejected under 35 U.S.C. §102(b) as being anticipated by Dietrich et al., U.S. Patent No. 5,630,070 (Dietrich). Applicants respectfully traverse this rejection.

Applicants respectfully submit that Dietrich fails to teach a variety of recited elements. A basic infirmity of Dietrich is the fundamental difference in the nature of the objective function that is being optimized in the claimed invention and in Dietrich. As will be apparent, it is to be understood that if objective function F is not in the same family as objective function G, and that

optimization algorithm A optimizes functions in the family of F but not G, and optimization algorithm B optimizes functions in the family of G but not F, that algorithm A and algorithm B constitute two separate and distinct algorithms.

In this particular regard, Dietrich does not teach "...converting an expected value function associated with the resources and products into a closed form expression" This is because Dietrich is concerned with a Linear Programming (LP) problem, and so is not equipped to handle a non-linear function such as an expected value function. The fact that Dietrich is concerned with the application of a Linear Programming (LP) optimization algorithm can be observed throughout Dietrich's disclosure. (Abstract; col. 1, lines 50-60; col. 4, lines 1-10; col. 6, lines 50-60; col. 13, lines 30-35; col. 14, lines 25-30, 35-40, 40-45 and 55-65; col. 17, lines 3-5; col. 18, lines 59-65; col. 19, "LP FORMULATION STEPS", including steps 1 through 14; col. 21, lines 30-40 and 50-55, and col. 32, lines 1-70) In fact, Dietrich does not allow for non-linear functions. Dietrich's need for linearity in its functions is a result of Dietrich's use of standard "linear programming" (LP) algorithms for computing the resource allocations that maximize the linear value function. (*See, e.g.*, col. 4, lines 1-15)

Moreover, it will be appreciated that LP optimization can only optimize objective functions in the family of linear functions (col. 18, lines 60-65; col. 21, lines 23-26). It will also be appreciated that the claimed conversion of an expected value function associated with the resources and products into a closed form expression has, as its basis, the use of an expected value function. This expected value function is not a linear function either before or after converting to a closed form expression, and so is not susceptible to the LP methods disclosed in Dietrich.

Applicants have reviewed the figures and sections cited in relation to this limitation, and are unable to discern the teaching of an expected value function therein. In fact, Applicants are unable to find the teaching of such a concept anywhere in Dietrich. Applicants respectfully posit that this is because the methods disclosed in Dietrich are simply not capable of handling such a function, because such a function is not linear.

Applicants therefore respectfully submit that, because the LP optimizations disclosed in Dietrich are not compatible with the claimed expected value function, Dietrich fails to anticipate the invention of claim 1. Applicants further respectfully submit that the foregoing arguments apply with equal force to claims 12 and 21, which contain limitations comparable to those discussed above, are also not anticipated by Dietrich. Accordingly, Applicants respectfully submit that each of the independent claims 1, 12 and 21 clearly distinguish over Dietrich, taken alone or in combination with other references and/or skill in the art. Dependent claims 2-11 and 13-20, which depend from independent claims 1 and 21, are distinguished from Dietrich for at least the same reasons as the independent claims from which they depend distinguish from Dietrich. Applicants respectfully request withdrawal of the rejection based upon 35 U.S.C. §102(b).

Rejection of Claims under 35 U.S.C. §103

Claims 11, 13 and 15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Dietrich et al., U.S. Patent No. 5,630,070 (Dietrich). Applicants respectfully traverse this rejection.

As an initial matter, Applicants respectfully note that Dietrich, even in view of skill in the art, or any of the other cited references continues to fail to show, teach or suggest the limitations of claims 1, 12 and 21. As noted previously, Dietrich does not teach "...converting an expected

value function associated with the resources and products into a closed form expression ...,” as claimed in claims 1, 12 and 21, and as described in the present specification. As is apparent, the addition of skill in the art to Dietrich does not remedy this deficiency.

It should also be noted that the expected value function recited in claims 1, 12 and 21 is non-linear in nature. By contrast, Dietrich employs linear transformations, as a result of the use of an LP analysis. Thus, Dietrich, even in light of the skill in the art, taken either separately or in combination with the other cited references, fails to address the need for, and so does not provide, a conversion of an expected value function associated with the resources and products into a closed form expression as part of a method for optimizing a multivariate representation of resources.

In fact, Applicants are unable to find anywhere disclosed in Dietrich the motivation to combine its disclosure with any teaching of the skill in the art or the other cited references to provide such functionality. There is no such motivation because the addition of the skill in the art (and/or the other cited references) to Dietrich would still fail to provide the benefits of the claimed invention. One of skill in the art would not have looked to the skill in the art to provide the features claimed in claims 11, 13 and 15 (as well as the other claims), to those disclosed in Dietrich for this very reason. To solve the problem of optimizing a multivariate representation of resources in the claimed manner (i.e., through the conversion of an expected value function), one of skill in the art, aware of Dietrich, would not have relied on their skill in the art (nor looked to the cited references) to arrive at the claimed technique, because Dietrich (nor none of the other cited references) show, teach or suggest such a method (or apparatus), a method for optimizing a multivariate representation of resources, as claimed in claims 1, 12 and 21 (as noted), as well as the claims depending therefrom.

Furthermore, even if the disclosure of Dietrich was combined with the skill in the art, the combination would not provide the advantages and capabilities of the claimed invention. As noted, Dietrich is directed to traditional solutions of LP problems. Because Dietrich fails to discern the problem addressed by the claimed invention (i.e., the need for a method of optimizing a multivariate representation of resources that uses an expected value function), Dietrich's solution fails to address such a problem, thereby failing to disclose the solution, and so the claimed invention.

Applicants therefore respectfully submit that each of claims 11, 13 and 15 clearly distinguish over Dietrich, even with the skill in the art, taken alone or in combination with the other cited references. Applicants respectfully submit that these arguments apply with equal force to claims 1, 12 and 21. Applicants therefore respectfully submit that independent claims 1, 12 and 21, as well as claim 2-11 and 13-20, which depend on claims 1, 12 and 21, are also allowable for at least the foregoing reasons. Applicants therefore respectfully request withdrawal of the rejections based upon 35 U.S.C. §103(a). Accordingly, Applicants respectfully submit that claims 1-21 are in condition for allowance.

CONCLUSION

In view of the amendments and remarks set forth herein, the application is believed to be in condition for allowance and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is invited to telephone the undersigned at 512-439-5084.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on March 1, 2004.

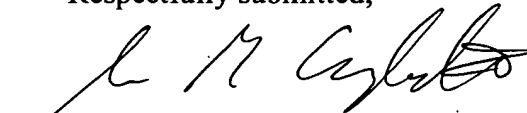


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3/1/04

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